Agile Software Development

L01 - Introduction

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Software products
The three P’s in Software Development Projects

Adapted from Dietmar Pfahl’s course on Software Engineering Management at UT
The three P’s in Software Development Projects

“People, Process, and Product” by Dwayne Phillips
http://dwaynephillips.net/CutterPapers/ppp/ppp.htm

Adapted from Dietmar Pfahl’s course on Software Engineering Management at UT
Software process

• A process defines **who** does **what**, **when**, and **how** to reach a specific goal

• In **software engineering**, the goal is to build a software product or to enhance an existing one

• Software engineering is an engineering discipline that is applied to the development of software in a **systematic approach** (called a software process)

Software process example

who does what, when, and how

do everything

software product

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Software process example (2)

who does what, when, and how?

do everything

software product
Software process example (3)

**who does what, when, and how?**

- **do everything for part A**
  - component A
  - merge A and B
  - software product

- **do everything for part B**
  - component B
Lifecycle models

• Using metadata history, lifecycle models can be extracted for any data elements that change over time (e.g., issue reports) *
• We can get an idea of the complexity of the process

Spaghetti process

Can this happen in software development?
Software process model examples

**Waterfall**
- Requirements
- Design
- Implementation
- Verification
- Maintenance

**V Model**
- Requirement Design
- System Design
- Architecture Design
- Module Design
- Unit Test
- Integration Test
- System Test
- Acceptance Test
- Verification Phases
- Validation Phases

**RUP**

**Scrum**
- Daily meeting
- Sprint
- Product owner
- Product backlog

**Spiral**

Which models are familiar to you?

- **Waterfall**
- **V Model**
- **RUP**
- **Scrum**
- **Spiral**
Process types

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Example: RUP (I)
Published by Jacobson, Booch, and Rumbaugh in 1998 (UP)
Example: RUP (II)

Notation:

**who** does **what**, **when**, and **how**?
Example: RUP (III)
Problems with *waterfall* (by Ken Beck)

- Spending enormous amounts time on non-development activities such as gathering requirements and design
- Dogmatically sticking to a design that was planned out far in advance of actual implementation, regardless of the design’s inherent flaws (the design phase is over when implementation occurs)
- Testing at the end of the development cycle

(*) the term is generally used to describe a critical view of a commonly used software development practice

- [https://rackandstack-tech.blog/2019/10/15/kent-beck-fired-from-facebook](https://rackandstack-tech.blog/2019/10/15/kent-beck-fired-from-facebook)
Factors in Choosing a Software Process

- Customer involvement
- Stable requirements
- Team size / proximity
- Developer experience
- Familiarity with technology
- Familiarity with domain
- Severity of impact of incorrect analysis
- Anticipated changes in technology
The Agile Manifesto

Individuals and interactions over processes and tools

Working software over comprehensive documentation

Customer collaboration over contract negotiation

Responding to change over following a plan

http://agilemanifesto.org/
The Agile Umbrella

Scrum, FDD, ASD, Lean, Crystal, DSDM, XP, Kanban
Get ready for next week!

- This week there are no practice sessions or consultation
- Check the additional readings on Moodle
- Get ready for the practice sessions - install the software
  - Elixir
  - Visual Studio Code
  - Git client
- Get acquainted with Elixir and Git

07.09 - Environment set-up (independent work)

There is no tutorial or recorded practice lesson for the first week. The first practice lesson is part of your independent work.

Use this week to set up the development environment and familiarize yourself with Elixir.

NOTES

- To run the Interactive Elixir on Windows Power Shell run the command `iex.bat` instead of `iex`